



I am going to rely on the area formula for quadrilaterals with perpendicular diagonals

$$Area = \frac{1}{2} d_1 \cdot d_2$$

The area of the square is

$$\frac{1}{2} Diagonal^2 = \frac{1}{2} x^2$$

The area of the rhombus is $\frac{1}{2}(GF)(x)$. GF can be found using the Pythagorean Theorem, giving $GF = 2 \cdot \sqrt{GA^2 - \left(\frac{x}{2}\right)^2}$ where GA, the side of the rhombus, is constant. Therefore, the rhombus area is $\frac{1}{2} \left(2 \cdot \sqrt{GA^2 - \left(\frac{x}{2}\right)^2} \right) (x) = x \sqrt{GA^2 - \left(\frac{x}{2}\right)^2}$.

The shaded area is $x \sqrt{GA^2 - \left(\frac{x}{2}\right)^2} - \frac{1}{2} x^2$.